



# a Strategic Plan for NOAA's National Ocean Service

FY 2003-2008 and Beyond

U.S. Department of Commerce  
National Oceanic and Atmospheric Administration  
National Ocean Service



# FOREWORD

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I am pleased to present the National Ocean Service (NOS) Strategic Plan, which charts our course for preserving and enhancing coastal and ocean ecosystems while supporting long-term economic growth. Developed by NOS's leadership and employees, this Plan describes our goals and strategies for achieving them over the next five years. This Plan also provides a framework within which we will execute NOS programs and measure performance to better connect to NOAA's planning, budget formulation, budget execution, and performance management.

As we enter the 21<sup>st</sup> century and respond to changes in society's demands on our oceans and coasts, emerging technologies, and changes in U.S. and international policies, we are determined to build on the great strides we have made during the past 30 years. This Strategic Plan outlines NOS's framework for addressing the challenges and opportunities in coastal and ocean stewardship and building the capacity to address new priorities. We will continue to seek innovative measures and approaches to ensure that America's coastal resources sustain livelihoods, provide recreational opportunities, and support the economy now and in future generations.

This is a dynamic and flexible Plan that will be revised and updated annually. We welcome input from our employees and stakeholders to ensure that this guiding document remains relevant and useful. I look forward to working with NOS's partners and customers as we pursue the goals and strategies outlined in this Plan.

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# INTRODUCTION

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From the headwaters of coastal and Great Lakes watersheds to the open oceans that extend beyond the Exclusive Economic Zone 200 miles offshore, America's oceans and coasts offer vast opportunities and challenges, including:

- *Increasing demands on ocean and coastal ecosystems from expanding human population and economic development, such as marine recreation and transportation;*
- *Evolving local, state, federal, and international institutional roles;*
- *Seasonal, interannual, and long-term ocean variability; and*
- *Advances in science and technology.*

Americans expect their ocean and coastal regions to provide a wide range of important resources and services, including food and fiber; recreation and tourism opportunities; flood control, water purification, and habitat from wetlands; safe and efficient marine transportation systems; and a diverse storehouse of plants and animals that support commercial, recreational, and aesthetic interests. While these expectations and uses are constrained by societal changes, natural dynamics of the coasts and open ocean, insufficient observations and scientific understanding, and conflicts arising from efforts to balance the use of these areas, NOAA's National Ocean Service (NOS)—one of NOAA's five major line offices—envision a time when the oceans and coasts are capable of providing an optimal and sustainable level of resources and services.

## **The VISION** *Sustaining the Prosperity of America's Oceans and Coasts*

Over the next five years, NOS will combine its core capabilities with new technologies and approaches to directly and indirectly guide the efficient and environmentally sound use of ocean and coastal ecosystems.

### **GOAL 1. Ecosystem-based Management**

The NOS vision for this goal is sustaining an equitable balance of the uses of the ocean, coasts, and Great Lakes through ecosystem protection, restoration, and management.

### **GOAL 2. Climate Variability and Change**

The NOS vision for this goal is enabling ocean, coastal, and Great Lakes users to cope with, and adapt to, climate variability and change by providing accurate forecasts and assessments of climate impacts.

### **GOAL 3. Weather and Water Information**

The NOS vision for this goal is reducing costs and risks to people, economies, and natural resources from natural hazards through access to better information and tools.

### **GOAL 4. Safe, Efficient, and Environmentally Sound Transportation**

The NOS vision for this goal is reducing costs and risks to people, economies, and natural resources through access to better navigation products and services.

## **The Mission** *To Manage Society's Use of Ocean and Coastal Ecosystems to Sustain their Natural Resources and Services*

NOS is well positioned to monitor, observe, understand, describe, assess, and predict natural and anthropogenic changes in U.S. ocean and coastal regions, and to use that information to engage, advise, and inform its stakeholders and manage multiple uses to sustain ecosystems.

NOS does not accomplish this alone. Its success, as well as the prosperity of the ocean and coastal regions, relies heavily on its diverse stakeholders, including:

- ***Federal, state, local, and tribal partners that implement resource management programs;***
- ***Academic partners that provide a solid scientific base for management and operations;***
- ***Private sector customers who utilize and provide information and technology to NOS; and***
- ***Business and environmental communities that help NOS balance environmental and economic interests.***

As part of NOAA and the larger federal system, NOS's efforts are critical to ensuring the nation's public safety, economic prosperity, and environmental well-being. This Strategic Plan outlines NOS's long-term approach to addressing increasingly complex issues in a rapidly changing world. It outlines the agency's efforts to meet existing and emerging challenges, while enabling communities to capitalize on opportunities that ensure environmentally sound economies. The NOS Plan parallels and complements the NOAA Strategic Plan, and guides NOS science, service, and management efforts toward achieving the agency's overarching goals. The mission goals, outcome measures, strategies, and cross-cutting priorities from the NOAA Plan are the framework for this Plan.



# CORE CAPABILITIES

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To carry out its mission, NOS will continue to build, strengthen, and nurture its core capabilities in research, observations, environmental modeling, forecasts and assessments, mapping and charting, and natural resource management. These capabilities include those in which NOS currently excels, and future capabilities required for NOS to remain a leader in operational oceanography and resource management for ocean, coastal, and Great Lakes ecosystems.

To complement these internal core capabilities, NOS supports a rigorous extramural program of grants and contracts, fully engaging the strengths and capabilities in the academic and private sectors. NOS also builds capacity in other governmental and nongovernmental organizations to understand and manage ocean, coastal, and Great Lakes ecosystems. These core capabilities include:

## **Research**

NOS provides rigorous and balanced research in support of operational and resource management responsibilities, including short-term research focused on current issues and needs, long-term research focused on emerging problems and opportunities, and technology development to improve program efficiency and effectiveness.

## **Observations**

NOS supports a suite of coastal, ocean, and Great Lakes observing systems for operational and resource management needs, and leads implementation of national and regional components of the Integrated Ocean Observing System.

## **Environmental Modeling**

NOS uses research and observing programs to build, maintain, and improve research and operational physical and ecological models for coastal, ocean, and Great Lakes systems.

## **Forecasts and Assessments**

NOS uses research, models, and observing systems to accurately and reliably forecast and assess environmental changes, both natural and human-induced.

## **Mapping and Charting**

NOS uses data from bathymetric surveys, oceanographic studies, remote sensing of land masses and seascapes, and geodetic and cartographic programs to produce the nation's nautical charts and a suite of mapping products that document changes in land and habitats. NOS makes many of these products available via the Internet, leading the way for e-commerce and Internet mapping services.

## **Natural Resource Management**

NOS, both directly and through partners, restores degraded areas and manages the uses of coastal, ocean, and Great Lakes ecosystems to balance today's uses with long-term sustainability.

# GOALS

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In support of NOAA's four mission goals, NOS will build on past successes, expand current efforts, and build new capacities to provide science, service, and management directly and through its partners. NOS will focus its human and fiscal resources and collaborate with federal, state, local, private sector, nongovernmental organizations, and academic partners to make measurable progress on each of these goals during the next five years and beyond.

## **GOAL 1 PROTECT, RESTORE AND MANAGE THE USE OF COASTAL AND OCEAN RESOURCES THROUGH ECOSYSTEM-BASED MANAGEMENT**

The ocean and coastal regions contains some of the nation's most economically valuable, ecologically diverse, and sensitive natural resources. Currently, more than half of the U.S. population – 141 million people – lives within 50 miles of the coast, which occupies only 11 percent of the land area of the lower 48 states. Coastal and marine waters support 28 million jobs, generate \$54 billion in annual goods and services, and provide a tourism destination for 180 million Americans each year. Despite the region's benefits, increasing population, recreation, and development opportunities have fragmented natural spawning grounds, degraded water quality, and increased the vulnerability of coastal communities to natural hazards.

*The NOS vision for this goal is sustaining an equitable balance of the uses of the ocean, coasts, and Great Lakes through ecosystem protection, restoration, and management.*

To work toward making this vision a reality, NOS and its partners will gather information on coastal and ocean resources, mitigate and respond to damage from natural disasters and human activities, provide tools and information to improve the sustainable use of coastal ecosystems, manage coastal resources to maximize their benefits to society, and promote environmentally sound economic development. Working in partnership with federal and state agencies, NOS will continue to protect, restore, and manage coastal uses through its legislative mandates, including the Coastal Zone Management Act; National Marine Sanctuaries Act; Coral Reef Conservation Act; Estuary Restoration Act; Comprehensive Environmental Response, Compensation, and Liability Act; Clean Water Act; Oil Pollution Act; and Harmful Algal Bloom and Hypoxia Research and Control Act.

### **Relevant NOAA Outcome Measures**

- *Increased number of coastal and marine ecosystems maintained at a healthy and sustainable level.*
- *Increased social and economic value of the marine environment and resources (e.g., seafood, recreation, and tourism).*
- *Increased number of acres and stream-miles restored for coastal and ocean species.*
- *Improved ecological conditions in coastal and ocean protected areas.*

## OBJECTIVES

NOAA identified three objectives for this Goal. These objectives are scientifically, socially, and economically interdependent. As NOAA moves toward long-term, comprehensive ecosystem-based management, it will strive to balance the multiple uses of coastal resources, including fishing; tourism; species, habitat, and biodiversity protection; boating and transportation; and other national and international activities that support the economy and coastal communities. Such ecosystem-based management requires improved predictive understanding of natural and human pressures that change and restructure ecosystems. To meet this longer-term objective, NOS will invest in improved ecosystem understanding, refine definitions of regional ecosystems, identify indicators of ecosystem health, and create new approaches to meet the nation's requirements for information, tools, and capabilities.

In the near term, NOAA and NOS will also make progress within each of the following three objectives. NOS's contributions to these efforts are outlined below.

### **Objective A Protect, Restore and Manage the Use of Ocean, Coastal, and Great Lake Resources**

NOS will continue to provide healthy coastal ecosystems by managing human uses of natural resources so that economic development is conducted in ways that maintain ecosystem diversity and long-term productivity. NOS will accomplish this objective through focused research, monitoring of coastal ecosystems, assessment and restoration of injured habitats, development and delivery of spatial information and other tools and technologies for decisionmakers, training and technology transfer to build improved state and local management capacity, and information to increase public understanding and stewardship of marine and coastal resources.

#### **NOS STRATEGIES**

**Monitor and Observe:** NOS's monitoring and observing efforts will track changes in coastal stresses (i.e., pollution, invasive species, climate change, extreme natural events, land and natural resource use), key ecosystems (e.g., coral reefs, estuaries), and marine protected areas (MPAs) such as the National Marine Sanctuaries and National Estuarine Research Reserves. Data and information from NOS programs and its partners will continue to assist managers and policy-makers in evaluating resource conditions, taking management actions when necessary, and assessing the impacts of management strategies. NOS and its partners monitor the environment to measure the effectiveness of their activities to protect, restore, and manage resources, particularly within the coastal zone, Great Lakes, and estuarine and ocean MPAs.

**Understand and Describe:** NOS research will help characterize Great Lakes, coastal, and ocean ecosystems and resources and the natural and human-induced stresses that impact them. This information will help predict ecosystem change, design effective restoration strategies, and provide useful and affordable geospatial and remote sensing tools. Through efforts to understand and explore Great Lakes, coastal, and marine ecosystems, NOS will inventory, characterize, and map MPAs, coral reefs, and submerged cultural resources.

**Assess and Predict:** NOS will improve data management, conduct assessments, and provide ecological forecasts through advance environmental modeling of the potential impacts of multiple

stressors (i.e., pollution, invasive species, climate change, extreme natural events, land and natural resource use) on coastal ecosystems and resources. It will identify and map sensitive resources and areas, evaluate the risk and vulnerability to communities and natural resources, forecast the movement of spilled oil and chemicals, and recommend cleanup actions to expedite recovery. It will develop methods to characterize and detect marine contaminants, biotoxins, and harmful algal blooms, and evaluate their effects on marine species and habitats. NOS will support competitive, peer-reviewed, and interdisciplinary research designed to improve scientists' ability to forecast the ecological effects of stressors in support of coastal management and the integrity of coastal communities.

**Engage, Advise and Inform:** NOS will provide information to the public about the need to protect and conserve ocean and coastal resources. This includes supporting K-12 environmental science programs, fellowships and internships through state and local governments, and adult education. NOS will provide critical scientific and technical assistance to decisionmakers on various issues, such as hazards risk and vulnerability assessment, watershed restoration and coastal zone management, oil and other hazardous releases, and natural resource damage assessment. Through scientific publications, formal and informal needs assessments, training, and workshops, NOS will provide the data, information, and technical tools that coastal communities need to better manage environmental threats and restore resources.

**Manage:** NOS will use its legal mandates to manage uses in ways that protect and restore the nation's ocean, coastal, and Great Lakes ecosystems. It will assist coastal states and territories in implementing their approved coastal zone management programs. It will fulfill its natural resource trustee mandates to restore coastal resources by preparing for, and responding to, threats such as oil pollution and hazardous spills. NOS will improve the management of the nation's existing MPAs and develop a framework for a more effective national system of MPAs that protects key habitats and allows sustainable uses of marine resources. NOS will accomplish this complex management strategy in collaboration with other parts of NOAA, federal, state, and local agencies, industry, academia, and nongovernmental organizations.

## Objective B Recover Protected Species

Through its research and management of ocean and coastal resources and its responsibilities as a natural resource trustee, NOS supports the protection and restoration of marine mammals and other protected species.

### NOS STRATEGIES:

**Monitor and Observe:** Through monitoring the environment, NOS and its partners will measure the effectiveness of their activities to promote protected species recovery, particularly within the coastal zone, Great Lakes, and estuarine and ocean MPAs.

**Understand and Describe:** NOS will conduct research on environmental stressors that may affect marine mammals and other protected species. NOS will provide scientific support to NOAA enforcement programs and other agencies to help resolve issues involving marine mammals and other protected species (e.g., standings and multiple deaths) through morphological evaluations, biochemistry, chemistry, and genetics. Research on restoration techniques will support the maintenance and recovery of protected species habitats.

**Assess and Predict:** NOS will model and assess risks to marine mammals and other protected species from chemical and other environmental stressors, provide environmental models of species recovery rates, and develop preparedness, response, and restoration tools for protected resources and habitats.

**Engage, Advise and Inform:** NOS will provide information to the public to encourage the protection and restoration of protected species. NOS will engage and inform decisionmakers by providing training and technical assistance, including environmental sensitivity maps. NOS will assist and advise ocean and coastal decisionmakers so that they can make informed decisions to aid in the recovery of protected species.

**Manage:** NOS supports the protection of marine mammals and other protected species, and their habitats in the Great Lakes, estuarine, and ocean MPAs. NOS will develop integrated networks of MPAs throughout the nation to ensure the persistence and sustainable use of marine resources.

## **Objective C Rebuild and Maintain Sustainable Fisheries**

Through its research and management of ocean and coastal resources and its responsibilities as a natural resource trustee, NOS will support the protection and restoration of sustainable fisheries.

### **NOS STRATEGIES:**

**Monitor and Observe:** Through monitoring the environment, NOS and its partners will measure the effectiveness of their management activities to promote sustainable fish populations, particularly in the coastal zone, Great Lakes, and estuarine and ocean MPAs.

**Understand and Describe:** NOS will support research on restoration techniques and develop environmental sensitivity index maps that support the maintenance and recovery of fish habitats.

**Assess and Predict:** NOS will assess and characterize coastal fish habitats, and develop tools to prepare for, respond to, and restore injuries to these habitats.

**Engage, Advise and Inform:** Through workshops, training, and other educational media, NOS will provide information to the public about rebuilding and maintaining sustainable fisheries. NOS will provide training and technical tools to coastal decisionmakers so they can make scientifically, socially, and economically informed decisions regarding fisheries management.

**Manage:** NOS will support important fisheries species and their habitats in estuarine and ocean MPAs. NOS will help develop special management zones, including “no-take” marine reserves, within larger, multiple-use MPAs, such as National Marine Sanctuaries. These special management zones will allocate uses spatially and temporally and improve the sustainable use of a wide variety of marine resources.

## GOAL 2 UNDERSTAND CLIMATE VARIABILITY AND CHANGE TO ENHANCE SOCIETY'S ABILITY TO PLAN AND RESPOND

Through the Coastal Zone Management Act (CZMA), NOS develops state capabilities to plan for and manage the impacts of climate change, and protects key estuarine areas designated within the National Estuarine Research Reserve System. Through the National Marine Sanctuaries Act and the Coral Reef Conservation Act, NOS protects and conserves coral ecosystems in the context of a changing climate. To manage these resources under NOAA's authority and to assist the states in managing their coastal resources under CZMA, NOAA must provide information and capabilities to measure, predict, and assess the impacts of climate variability and change. These impacts on land and in the coastal regions are driven by significant variations found upland and in the oceans. For example, a key piece of information includes relative sea-level trends derived from NOS's long-term water-level stations, which are operated under the authority of the U.S. Coast and Geodetic Survey Act. These trends are the result of changes in both ocean dynamics and vertical land movement.

*The NOS vision for this goal is enabling ocean, coastal, and Great Lakes users to cope with, and adapt to, climate variability and change by providing accurate forecasts and assessments of climate impacts.*

Among the potential coastal impacts from climate variability and change, the following are the most relevant to NOS's mission. Effects of:

- *Changes in relative sea-level and coastal storms on the sustainability of coastal communities and wetlands;*
- *Changes in precipitation and freshwater flow, and resulting changes in nutrient delivery, on the management of coastal eutrophication; and*
- *Changes in ocean temperature, circulation, and carbon dioxide on the sustainability of coral ecosystems.*

### Relevant NOAA Outcome Measures

- *Increased use and effectiveness of climate observations to improve long-range climate, weather, and water predictions.*
- *Increased use and effectiveness of climate information for decisionmakers and managers (e.g., for industry, natural resource and water managers, community partners, and public health professionals).*
- *Increased use of the knowledge of how climate variability and change affect commerce.*

### NOS STRATEGIES:

**Monitor and Observe:** NOS will measure changes in absolute and relative sea level, and other coastal indicators of the effects of climate variability. NOS will emphasize monitoring and observing annual and long-term changes in sea level, coastal topography, land cover, shoreline position, near-shore bathymetry, and the frequency of extreme high waters. NOS will also measure temporal trends in coastal sea-surface temperatures, chlorophyll, nutrients, and salinity.

**Understand and Describe:** NOS will conduct research on the impacts of climate change in coastal communities and ecosystems, with an emphasis on techniques to reduce uncertainty in future forecasts. A key feature of this research is understanding how climate-driven changes in regional to global ocean dynamics impact the coastal region.

**Assess and Predict:** NOS will develop and improve ecological forecasts and integrated assessments of the impacts of climate variability and change on coastal communities and the ecosystems upon which they depend. NOS will emphasize models and assessments of the impacts of changes in relative sea level, storm frequency, and coastal inundation; water and nutrient inflow and estuarine eutrophication; and ocean surface temperature, carbon dioxide levels, and coral survival.

**Engage, Advise and Inform:** NOS will support internal and extramural partnerships to provide public information on climate and climate-related issues. NOS will increase the availability of its information and delivery of products such as sea-level trends, ecological forecasts, and integrated assessments. NOS will engage, advise, and inform decisionmakers on climate change issues through education forums and technical assistance at the local, state, and federal levels.

### GOAL 3 SERVE SOCIETY'S NEEDS FOR WEATHER AND WATER INFORMATION

In fulfilling its responsibilities under the Coastal Zone Management Act, NOS helps coastal communities handle the impacts of changes in weather and water resources. More than half of the U.S. population lives in the coastal zone and confronts a wide range of natural hazards. They include the potential loss of life and property from hurricanes and severe storms, floods and landslides, tsunamis, shoreline erosion, and land subsidence. Coastal storms alone have a serious economic impact, with damages estimated between \$10 and \$50 billion each year.

*The NOS vision for this goal is reducing the costs and risks to people, economies, and natural resources from natural hazards through access to better information and tools.*

Growing populations and expanding coastal development will increase the number of people vulnerable to natural hazards. NOS will help reduce the impacts from natural hazards by providing federal, state, and local decisionmakers with timely and accessible information, tools, and financial assistance. These resources will strengthen the abilities of coastal states and communities to plan for, and recover from, storms and other natural hazards.

#### Relevant NOAA Outcome Measure

- *Increased satisfaction with and benefits from NOAA information and warning services, as determined by surveys and analysis of emergency managers, first responders, natural resource and water managers, public health professionals, industry, government and the public.*

#### NOS STRATEGIES:

**Monitor and Observe:** As part of an emerging integrated ocean observing network, NOS will collect and provide fundamental ocean, coastal, estuarine, and inland data to address



impacts from coastal storms and other natural hazards. Such information includes accurate, up-to-date hydrographic survey data and physical oceanographic and geodetic information.

**Understand and Describe:** NOS will invest in research and technology to better understand the relationships among coastal communities, weather, and the consequences of weather and water forecast modeling on ecosystems. It will study the impacts of regional weather, water availability, and extreme events on the coastal region by improving the integration of terrestrial, meteorological, and oceanographic information.

**Assess and Predict:** NOS will develop and improve coastal, Great Lakes, bay, and harbor models of water levels, subsidence, currents, temperature, and salinity to better forecast the impacts of storm events on coastal ecosystems and communities. It will work within the overall NOAA environmental modeling framework to support advanced modeling of regional coastal ecosystem processes influenced by weather and water, and predict the response of natural, economic, and social systems to extreme events.

**Engage, Advise and Inform:** NOS will support internal and extramural partnerships to engage and inform the public on weather and water issues. NOS will advise decisionmakers through education materials, technical assistance, training, and financial assistance to mitigate environmental, social, and economic impacts of natural hazards. NOS will assess user and decisionmaker requirements by including users and decisionmakers in the design, implementation, and evaluation of products, services and applications.

#### **GOAL 4 SUPPORT THE NATION'S COMMERCE WITH INFORMATION FOR SAFE, EFFICIENT, AND ENVIRONMENTALLY SOUND TRANSPORTATION**

*The NOS vision for this goal is reducing costs and risks to people, economies, and natural resources through access to better navigation products and services.*

NOS helps the nation navigate with confidence. Under the authority of the Coast and Geodetic Survey Act, and as clarified through the Hydrographic Services Improvement Act, NOS provides world-class products and services such as electronic navigational charts, Physical Oceanographic Real-Time Systems, and access to the global positioning system to improve precision in vessel positioning and location. NOS's operational programs connect the dynamics of the open ocean to critical variations in the nation's ports and shipping channels to acquire and deliver the data and information needed for safe, efficient, and environmentally sound transportation. These programs operate primarily along the coast, but NOS has charting responsibilities for the nation's Exclusive Economic Zone and interests in how the open ocean drives coastal processes. NOS's role in navigation services has never been more important as the U.S. Marine Transportation System (MTS) prepares for exponential growth. Over the next 20 years the total volume of goods is expected to double and the number of recreational users is expected to grow by 65 percent to more than 130 million. High speed ferry service and cruise ships currently are experiencing rapid growth. Because over 95 percent of goods (by tonnage) are imported or exported through U.S. ports, it is vital for this economic lifeline to flow as safely and as efficiently as possible.



Through the use of state-of-the-art technology, national observation and reference systems, and strategic partnerships with key federal, state and local agencies, NOS will meet the challenges posed by ever larger vessels, hazardous cargoes and materials, aging landside facilities and infrastructure, oil and chemical spills, and threats to national security. NOS partnerships with the private sector are particularly critical under this goal to help its operational programs collect data and enhance products required by the user community. The MTS uses some of the nation's most valuable natural resources thus, it is important for NOS to minimize the risks to society and the environment inherent in marine transportation.

NOS's role does not end where the ship meets the shore. The growing strain on landside intermodal connections is already evident and is expected to increase. Under the Coastal Zone Management Act and other authorities, NOS will work with port and coastal communities to ensure that port operations and development proceed in efficient and environmentally sound ways. NOS will help guide port improvements such as dredging projects, construction of waterfront intermodal facilities, and conversion of abandoned industrial properties (brownfields) to productive port facilities that help reduce costly port congestion and delays. NOS's precise nationwide positioning network also will support the efficient transport of goods from coast to coast, and facilitate improvements in other transportation-related sectors.

#### **Relevant NOAA Outcome Measures**

- *Increased use and effectiveness of environmental information for planning for marine, air, and surface transportation systems.*
- *Reduced number of and harm from navigation-related accidents due to grounding and allisions (hitting fixed objects).*
- *Increased number of ports where the environmental consequences of port development and operations are minimized.*
- *Increased number of ports with an improved vessel cargo carriage capacity due to use of NOAA's marine navigation information products and services.*
- *Increased safety and productivity of transportation systems.*

#### **NOS STRATEGIES:**

**Monitor and Observe:** NOS will use advanced technology to accurately monitor and observe up-to-date hydrographic and shoreline data, as well as physical oceanographic information such as tides, water levels, and tidal currents, supported by NOS's precise positioning reference network. NOS systems will contribute to the emerging integrated ocean observing network.

**Understand and Describe:** NOS will support research and technology development on new ways to collect and analyze data, display spatial framework data layers, and model the coastal ocean environment to support a safer, more efficient, and environmentally sound MTS.

**Assess and Predict:** NOS will build on NOAA efforts to improve coastal and Great Lakes water level and circulation models by improving its assessment and predictive tools to ensure that its constituents can make informed decisions regarding navigation, port security, coastal resource management, and oil and chemical spills.

**Engage, Advise and Inform:** NOS will engage and inform the public about commerce and marine transportation issues through advanced delivery systems such as the Internet, e-commerce, and other innovative approaches to ensure that its customers receive products and services in a timely fashion. NOS will continue to engage and inform decisionmakers and partners at all levels regarding marine transportation issues through continual assessments of user requirements and effectiveness of the information and services provided. NOS will provide leadership in hazards preparedness and response.

## CROSS-CUTTING PRIORITIES

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In addition to its four mission goals, NOAA identified six cross-cutting priorities to guide decisions about agency priorities and to improve its operations and delivery of services during the next five years. NOS contributes to each of these cross-cutting priorities as described below.

### **PRIORITY INTEGRATED GLOBAL ENVIRONMENTAL OBSERVATION AND DATA MANAGEMENT SYSTEM**

NOS recognizes the central role of observations in its resource management and operational programs. NOS is developing a strategy to lead ocean and coastal aspects of and fulfill NOAA's role in an Integrated Global Environmental Observation and Data Management system.

#### **NOAA STRATEGY**

*NOAA will develop an Integrated Global Environmental Observation and Data Management System based on user requirements and an integrated architecture.*

NOS is actively engaged in building, operating, and providing access to ocean and coastal observing systems and information. Because NOS's observing systems are significant components of the nation's "backbone" of coastal observations, NOS will continue to work within NOAA and with its federal, state, and regional partners to integrate coastal observing systems within the Integrated Global Environmental Observation and Data Management System.

NOS will integrate key attributes of its observing systems within a common NOAA architecture and develop a single NOS web portal to deliver monitoring data, including spatial data from these systems.

#### **NOAA STRATEGY**

*NOAA will promote national and international cooperation in developing this system.*

NOS will support NOAA's international role by maintaining operational ties with its international counterparts involved in hydrographic, geodetic, and water-level observing systems. NOS's international activities include supporting observing systems for climate change, transportation and commerce, and weather and water information.

NOS will continue to support observing systems that transcend U.S. borders, including Great Lakes activities with Canada and nautical charting with Mexico. NOS also will continue to assist in operational technology transfer with military agencies that work internationally, such as National Imagery and Mapping Agency and the Office of the Oceanographer of the Navy.

#### **NOAA STRATEGY**

*NOAA will promote regional and local cooperation in developing this system.*

NOAA, as one of the leading federal agencies implementing the Integrated Ocean Observing System, will have a significant role in implementing regional observing systems. NOS will foster partnerships with other federal agencies to design and implement a federal system that is integrated with regional programs. NOS will foster technology transfer of accepted standards,

procedures, and protocols for all aspects of observing systems so that information collected from regional systems will be seamlessly absorbed into federal databases. Regional observing systems will help fill gaps in federal observing systems by increasing the spatial frequency and focus products toward local and regional users. NOS will build upon its significant present capacity and infrastructure to help local and regional users, and will help plan, design, and implement regional and local pilot programs. NOS and other NOAA offices will continue to work with the interagency National Ocean Research Leadership Council and the Ocean.US office to support development of a national federation of regional associations for coastal observations.

## **PRIORITY ENVIRONMENTAL LITERACY, OUTREACH, AND EDUCATION**

NOS strives to create an ocean-literate society by fostering a sense of connection with and understanding of the oceans and coasts among students of all ages. NOS will expand its communications with stakeholders, K-12 and college students, and the public using a range of media and multimedia products. NOS will make its products, information, and people more available to the public, and encourage discourse in areas where NOS maintains expertise and responsibilities.

### **NOAA STRATEGY**

*NOAA will improve community and public awareness of its mission goals and accomplishments, as well as basic knowledge of the environment and human interactions with it.*

NOS will enhance public access to information, tools and other resources to ensure all Americans understand and appreciate the role of the oceans and coasts in their everyday lives as well as how their actions influence the health of these critical ecosystems. NOS will use the Internet in conjunction with traditional print and broadcast media to promote awareness of NOS and NOAA missions and programs. NOS also will employ other dynamic and cost-effective technologies to distribute its educational and outreach products.

### **NOAA STRATEGY**

*NOAA will create an agency-wide mechanism for distributing and using its educational outreach materials and services, and for measuring effectiveness of its outreach efforts.*

NOS envisions a public with the information and tools to make informed choices for coastal and ocean stewardship. NOS endeavors to inform and inspire educators and students, and become a nationally recognized source for reliable and accurate marine science education materials. To accomplish these goals, NOS will engage preeminent ocean scientists, educators and organizations. NOS will ensure all educational and outreach materials, products and services are accessible online through its Web sites. NOS will establish formal alliances with major educational institutions, including the National Science Teachers Association and the National Marine Educators Association, to evaluate and help develop educational programs and products. Finally, NOS will maintain direct dialogue with educators, students, and the public to improve its products and services.

### **NOAA STRATEGY**

*NOAA will actively encourage and promote careers in the environmental sciences.*

NOS will continue to support an agency-wide initiative to increase the number and diversity

of students involved with NOAA. NOS will promote and enhance environmental science programs, internships, fellowships and scholarships to minority and under-represented students. NOS will participate in career fairs and seminars for high school and undergraduate students. NOS will expand its focus on marine careers through popular Web sites, such as NOAA Ocean Explorer. In addition, NOS will partner with NASA, NOAA's Sea Grant Program, and the National Science Foundation's Center for Ocean Science Education Excellence to create a new Web site devoted to providing students with up-to-date information about marine-related career opportunities. These efforts will help foster the next generation of NOAA's workforce.

## **PRIORITY SOUND, STATE-OF-THE-ART RESEARCH**

NOS is developing a research strategy that combines intramural and extramural efforts. It balances short- and long-term research and technology development in response to critical gaps in its resource management and operational requirements.

### **NOAA STRATEGY**

*NOAA will increase its investments in short- and long-term research and in development of advanced technology to understand, describe, and predict changes in the natural environment.*

NOS's science mission is to assess and predict the status of and trends in coastal ecosystems and their responses to human and natural stresses for effective management and stewardship. To do this, NOS researches and models the nature and rate of change of coastal ecosystems, which are shaped by stressors such as pollution, invasive species, climate change, extreme natural events, and land and natural resource use. These stressors can impact ecosystems independent of one another or at the same time, and yet their cumulative effects are poorly understood. Therefore, NOS will support short-term research focused on supporting existing management and operational needs, and long-term research that develops new paradigms for understanding, describing, and predicting the effects of these stressors. NOS will also invest in the development of advanced technologies to gather and analyze environmental data.

### **NOAA STRATEGY**

*NOAA will accelerate the transfer of knowledge and technology into operational use and ecosystem management.*

NOS conducts and supports research and technology to understand, describe, and predict coastal ecosystem dynamics. The results can then be applied to promote effective management and stewardship of coastal ecosystems. NOS will deliver timely and relevant results from its research, monitoring, and assessment programs via reports, scientific publications, nautical charts, technical assistance, and the Internet for NOAA and its constituents to use in operations and ecosystem-based management.

### **NOAA STRATEGY**

*NOAA will strengthen external partnerships and increase interactions by ensuring that 50% of new research funds are spent within the external community (e.g., university, private sector) via competitive, peer-reviewed proposals.*

NOS strives to maintain a balanced research portfolio that addresses both short- and long-term needs and supports the areas of operational coastal oceanography, safe and efficient marine

transportation, productive coastal communities, and stewardship of coastal and ocean ecosystems. Recognizing that these activities are too diverse for NOS to tackle alone, the agency vigorously supports external research efforts. As NOS's research enterprises grow, it will strive to balance internal and external efforts and respond to broader NOAA priorities.

## **PRIORITY INTERNATIONAL COOPERATION AND COLLABORATION**

NOS partnerships enable the United States to contribute to international efforts to reduce land-based sources of pollution, manage and conserve marine biodiversity, advance navigation safety, and promote capacity for science-based coastal and ocean resource management.

Through international organizations and bilateral agreements with other governments, NOS improves capacities for coastal and marine stewardship and safe navigation. As a globally recognized leader in coastal and marine policy, management, and science, NOS helps set international policy, builds coastal and ocean management capabilities, and conserves marine biodiversity worldwide. At the same time, U.S. programs are strengthened by the exchange of experiences and ideas with other countries and regions. NOS managers and scientists benefit from experience gained by tackling similar coastal and marine problems in other countries, which often possess fewer resources than those available in the U.S. The integration of NOS's international programs with NOAA's efforts will increase the capacity to address multidisciplinary, transboundary, and multicultural issues intrinsic to effective coastal management in the U.S. and abroad.

### **NOAA STRATEGY**

*NOAA will leverage United Nations Specialized Agency agreements, as well as bilateral relationships with individual countries, to maximize the development and use of research, observations, environmental science services, and environmental management for the mutual benefit of all parties.*

NOS will continue to work with United Nations Specialized Agencies, including the United Nations Environment Programme, International Hydrographic Organization, International Maritime Organization, and Intergovernmental Oceanographic Commission, to represent U.S. interests in coastal and marine observations, mapping and charting, geodesy, and management. Working with United Nations Specialized Agencies enhances the effectiveness of U.S. contributions to international treaties, conventions, and agreements in which NOS has special interest, such as the Program of Action for the Protection of the Marine Environment from Land-Based Activities, and the Protocol on Specially Protected Areas and Wildlife in the Wider Caribbean Region.

### **NOAA STRATEGY**

*NOAA will promote international consensus and cooperation in support of its mission and U.S. foreign policy through multilateral and bilateral conferences and relationships.*

NOS will continue to work with the U.S. Department of State to encourage coastal and marine ecosystem-based management through Science and Technology Agreements with China, Vietnam, Korea, and other countries, and the U.S.-Japan Agreement on Natural Resources. The U.S. made a commitment at the 2002 World Summit on Sustainable Development to implement the "White Water to Blue Water" Initiative pilot program for ecosystem-based

management in the Caribbean. NOS will play a major role in this effort. NOS will continue to work closely with the World Bank's Global Environmental Facility Council, including programs related to adaptation to climate change in the Caribbean and the conservation of marine biodiversity in China. NOS will continue to chair the World Conservation Union (IUCN) World Commission on Protected Areas marine program, as it has since 1999. It will also be a major contributor to the International Coral Reef Initiative and its Global Coral Reef Monitoring Network. Through these relationships, NOS gains experience and provides leadership in meeting NOAA's goals of increased consensus-building and cooperation.

## **PRIORITY HOMELAND SECURITY**

NOS will work at both the national and regional levels, and use advanced delivery systems (e.g., NOAA's Enterprise GIS Initiative) to inform its partners and customers who rely on geo-spatial data for decisions related to homeland security.

### **NOAA STRATEGY**

*Through its core capabilities, strategic investments, and partnerships, NOAA will expand its support for homeland security, coordinating delivery of its products, services and capabilities to Federal, state, and local emergency managers and responders, and strengthening its own infrastructure to protect agency personnel, facilities, and information services.*

To support NOAA's homeland security effort, NOS will provide integrated and accurate data in near real-time, continue to test and improve its Continuity of Operations Plans, and develop essential backup systems to eliminate single points of failure in case of a catastrophic event. NOS will provide and improve hazardous-material trajectory forecasts, dispersion models, and chemical threat analyses that allow emergency managers and first responders to make timely and effective decisions. It will expand the number of harbors capable of providing rapid updates of water levels, tides and currents through the Physical Oceanographic Real Time System Program. In the event that ships must be rerouted around or evacuated from a U.S. port or harbor, NOS tide and current information will support safe passage with little interruption to maritime commerce. NOS can accurately and rapidly disseminate nautical chart updates and critical chart corrections to mariners, and create and distribute temporary charts and data as needed by primary responders. NOS will also increase the number and quality of its electronic navigational charts, which are key to maritime security, port safety, and uninterrupted maritime commerce.

## **PRIORITY ORGANIZATIONAL EXCELLENCE: Leadership, Human Capital, Facilities, Information Technology, and Administrative Products and Services**

Consistent with the President's Management Agenda and NOAA's goals, NOS will pursue management activities that enable it to respond to emerging coastal issues of the 21st century, provide timely delivery of products and services to customers, leverage new technology and information delivery, and streamline key management practices and processes.

### **NOAA STRATEGY for Human Capital**

*NOAA will expand workforce training, incentives, succession planning, and other administrative tools to recruit and retain a skilled workforce.*



Building upon a Fiscal Year 2002 strategic workforce analysis to assess its employees' knowledge, skills, and abilities, NOS will develop strategies to identify new competency requirements, find innovative ways to attract highly qualified professionals, retain highly qualified employees, and train future leaders. NOS will continue to administer its pioneering Legacy Program, which was established to encourage employees nearing retirement to pass on their knowledge, experience, and best practices.

#### **NOAA STRATEGY for Facilities**

*NOAA will improve processes for requirements development, construction processes, consolidation of services and facilities and increase funding for deferred maintenance.*

NOS will work with NOAA to develop and implement a ten-year NOAA Facilities Master Plan. This plan will survey and classify the condition of all NOAA facilities (leased and owned); prioritize repairs and maintenance; and assess the need for replacement, consolidation, environmental cleanup and abandonment of buildings and properties. In addition, NOS will employ best practice in safety, environmental compliance, and security management to ensure that its employees work in a safe and secure environment.

#### **NOAA STRATEGY for Information Technology**

*NOAA will maintain and improve its technology infrastructure in order to enhance its scientific productivity through seamless sets of observed and forecast products, advanced high-bandwidth networks, super-computing capabilities, and support for increasingly flexible sources for the delivery of information.*

NOS is committed to providing a robust, reliable, and secure infrastructure that delivers products and support services to constituents now and in the future. NOS will develop and implement initiatives to improve the delivery of products and services, including an easy-to-use, on-line grants application system; World Wide Web portals for single points of access to NOS and NOAA information; and a constituent feedback system to improve services. NOS will develop metadata for existing and planned data sets to document data quality, avoid redundant data collections, and facilitate data access through NOS World Wide Web portals. These data and other NOS technology and information will be protected through the development and implementation of Continuity of Operation Plans, as well as vigilant system monitoring and increased security awareness. NOS will work with other NOAA offices to improve collaborative efforts by implementing advanced networking capabilities and improving database management, storage area networks, and contingency planning.

#### **NOAA STRATEGY for Administrative Programs and Services**

*NOAA will improve the efficiency, accountability, and transparency of its administrative programs and services, including financial performance, human resources, information technology and electronic government, grants management, competitive sourcing, and budget and performance integration through process optimization and assessing customer satisfaction.*

NOS is committed to providing administrative and management services that support its scientific and technical programs and sustain organizational excellence. NOS will explore new improvements and tools to streamline internal administrative processes to serve its customers and constituents. NOS will continue to support NOAA's efforts to improve performance and accountability in management of its financial and human resources, electronic government, competitive outsourcing, grants management, and budget and performance integration.



NOS is committed to providing its products and services to the public as efficiently and cost-effectively as possible. NOS will continue to use a combination of sourcing mechanisms and partnerships to obtain the best science and services for its constituents. NOS will continue to improve its financial performance with real-time data, accurate and up-front planning requirements, and strict adherence to procedures set forth by NOAA to avoid audit issues. NOS will continue to improve accountability among its programs through performance-based budgeting and management. This Strategic Plan sets forth the goals and priorities for the agency, the strategies through which NOS will support those goals and priorities, and the performance measures against which progress will be determined.



# APPENDIX A: NOS ORGANIZATION

